

DELTA PROTECTION COMMISSION

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To: Delta Protection Commission
From: Lori Clamurro, Delta Protection Commission Staff
Subject: Additional Information on the Programmatic CALFED DEIR/DEIS

The material included in this packet has been prepared by Delta Protection Commission Staff over the course of the past few months in response to the ongoing efforts for a CALFED Bay-Delta solution to California's water quality and supply issues. The first document (22 pages) summarizes the material presented in CALFED's DEIR/DEIS. The second document is a Staff report which includes draft comments on the DEIR/DEIS. Both of these documents were presented to the Delta Protection Commission's CALFED Subcommittee at its meeting on April 20, 1998; the second document has been revised, and both documents are hereby submitted for review by the entire Commission.

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WATERSHED MANAGEMENT STRATEGY

Summary

The water management strategy involves implementing programs in streams, lakes, reservoirs, underlying aquifers connected to surface waters, and the estuary which would reduce stressors resulting from mining practices, agricultural discharges, weak levee structures, excessive runoff and erosion, and other land uses which reduce beneficial uses of the Bay-Delta. It is divided into two primary areas: the upper tributary watershed above reservoirs and major fish passage obstructions, and the lower watershed, below these obstructions. Lower watershed actions focus on restoring natural processes to the watersheds, removing or mitigating for stressors, and improving water quality. These could include instream flow patterns, water quality enhancements, surface and groundwater integrated resource programs, and watershed restoration plans; they could also include groundwater management and conjunctive use as methods of supplementing water supplies for all uses. Actions in the upper watersheds could include upper-meadow restoration opportunities, which would produce a natural process resulting in meadow groundwater recharge, increases in groundwater storage in meadows, increases in water yield, and a time-shifting of water releases in streams away from spring months to late summer months by these meadows.

CALFED proposes to fund projects which address the actions described above.

Finally, CALFED proposes a technical oversight entity to implement this program. Options include: appointment of a current CALFED state or federal agency; formation of a Joint Power Authority (local government, stakeholders, and CALFED agency representatives governed by a Board of Directors); creation of an Interagency Watershed Steering Committee (CALFED agencies, local government, and stakeholders); and a new entity.

Delta issues

Impacts to the Physical and Biological Environment:

- Any actions affecting water temperature would not likely affect the entire Delta, but may affect specific sections of some channels.
- In addition to actions identified for the Delta, watershed management coordination (including improved land use practices) would reduce movement of contaminants into the Delta system.
- Many of the proposed activities are expected to improve water quality and flows in the Delta, ultimately benefiting native vegetation (riparian and freshwater marsh habitat) and associated wildlife and special status species.

Impacts to Agricultural Land and Water Use, Economics, and Social Issues:

Watershed management component is not addressed.

Impacts on Recreational Resources:

Watershed management component is not addressed.

WATER USE EFFICIENCY COMPONENT

Summary

The Water Use Efficiency Component focuses on improvements in local water use management and efficiency in the urban, agricultural, and diverted environmental water use sectors. CALFED identifies two steps that can be taken to improve water efficiency: encouraging more water users and suppliers to implement proven cost-effective efficiency measures; and identifying new opportunities (new techniques and technologies, as well as water conservation and recycling). CALFED hopes to achieve these activities by emphasizing incentive-based (as opposed to regulatory) actions, preserving local flexibility, removing disincentives and barriers to efficient water use, and offering greater help in the planning and financing of local water use management and efficiency improvements.

This program addresses the role of water transfers in water use efficiency and identifies issues which need to be resolved in developing an effective water market. Third-party impacts (and their mitigation) and groundwater use issues are also addressed in this component of the CALFED program. Finally, there is discussion about the role and functions of a Clearinghouse for water transfers.

Delta issues

Impacts on the physical and biological environment:

- Delta hydrology could be affected by changing the timing and reducing the amount of water diverted for agricultural, municipal, industrial, and ecosystem purposes.
- Policies would mainly cause reduction in diversions among urban and agricultural users. Recycling projects in export urban areas would increase water supply without increasing Delta exports or reducing Delta outflow, and on-farm irrigation efficiency improvements could bring about a reduction in applied water in the range of 100,000 to 150,000 acre-feet annually; this could improve water quality and reduce impacts to fisheries.
- No anticipated impact on groundwater use in the Delta lowlands.
- Expected significant benefits to fisheries and aquatic resources (reduced entrainment at export pumping plants, impacts associated with reduced diversions, modifications in flow timing and reservoir releases, improved water quality, and water transfers for ecosystem purposes). Potential adverse impacts could occur if efficiency improvements result in less water available to indirect downstream uses (Delta outflow, wetlands and riparian habitats in drains).
- Cropping pattern changes (such as fallowing) could result in temporary and permanent loss of wintering waterfowl foraging habitat.

Impacts on agricultural land and water use, economics, and social issues:

- No direct land use impacts expected; however, there may be indirect impacts to agricultural land use. A potentially beneficial impact is that improved efficiency could uphold the viability of agriculture in some areas. However, a potentially significant adverse impact is that land may be removed from production in other areas due to the expenses associated with on-farm irrigation efficiency improvements.
- Efficiency improvements could also bring about a shift to high-value crops (orchards, vineyards), which may lead to a hardening of water demand.

Impacts on recreational resources:

- **There could be adverse impacts on the availability of lands for recreational hunting or for bird watching, to the extent that water efficiency improvements reduce wetlands or riparian areas; these impacts are not expected to be significant in the Delta.**

LONG-TERM LEVEE PROTECTION PLAN

Summary

The Delta Levee System Integrity Program proposes to reduce the risk to land use, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees. The general approach for this program is built upon a foundation of existing state, federal, and local agency programs. Implementation of the program will meet PL 84-99 criteria for Delta project and non-project levees.

Five specific elements are identified under this Program: Delta Levee Base Level Protection Plan; Delta Levee Special Improvement Projects; Delta Island Subsidence Control Plan; Delta Levee Emergency Management Plan; and Delta Levee Seismic Risk Assessment. Establishing a stable funding source and streamlining and consolidating the permitting process are objectives common to several of these elements.

Other related program activities include habitat improvements, levee associated habitat, Delta in-channel islands, and beneficial reuse of dredge material.

Delta issues

Impacts to the Physical and Biological Environment:

- Channel geometry may be altered by creating setback levees, dredging channels for levee construction, or increasing levee height. These activities could result in increased channel capacity, reduced stream velocities, and the potential for more sediment deposition.
- In areas where levee strengthening required setback levees or flooding of Delta islands, there would be a reduction in agricultural acreage. Groundwater pumping would no longer be needed on these lands; this would provide potentially significant benefits from reductions of pumping-induced subsidence and loading of farm chemicals.
- Allowing development of natural riparian and marsh communities would beneficially impact the Delta's structural characteristics.
- Increasing the landbase of levees could affect agricultural land and grassland adjacent to existing levees. Upgraded levees could be engineered to accommodate higher quality habitat.

Impacts to Agricultural Land and Water Use, Economics, and Social Issues:

- Levee system integrity measures could affect up to 35,000 acres of land in the Delta, most of it important agricultural land. Specific locations of affected lands are not currently known.
- The conversion of agricultural land would result in changes in the number of jobs for farmers, farm workers, and agribusiness. Stress may be put on existing social services, and the social and economic structure of Delta communities would be adversely affected. It is thought that the increase in the need for social services to provide assistance for displace workers will be temporary, and is not expected to be significant.

Impacts on Recreational Resources:

- Beneficial impacts to recreation facilities and opportunities is expected with the development of beach slopes and beach areas. To the extent that impacts include elimination of an existing recreation opportunity in a specific area of the Delta (boat ramps, piers, marinas), specific recreation enhancements would be required for mitigation.
- Levee system integrity measures should reduce the risk to land uses (camping facilities,

boat launches) from catastrophic breaching of Delta levees.

- Short-term impacts to recreation activities could occur during levee repairs and strengthening.
- There is expected to be an increase in levee-associated recreation (sport fishing from banks) and other types of recreation along rivers, resulting in an increase in recreation spending and user benefits.

ECOSYSTEM RESTORATION PROGRAM PLAN

Summary

CALFED's Ecosystem Restoration Program (ERP) addresses the need to improve and increase aquatic and terrestrial habitats and improve ecological functions throughout the solution area in order to support sustainable plant and animal populations. This program hopes to achieve this goal by taking advantage of natural processes wherever possible.

The foundation for implementation of this program is adaptive management, which relies upon the identification of indicators of ecosystem health, comprehensive monitoring of these indicators to measure improvement over time, focused research, and phasing of actions.

The ERP Plan is divided into three volumes. Volume I presents the CALFED "Visions" for ecological processes (natural sediment supply, stream meander), habitats (seasonal wetlands, riparian and riverine aquatic, agricultural), species and species groups, and reducing or eliminating stressors. Volume II presents visions for the 14 ecological zones, including four zones in the Legal Delta. It also contains implementation objectives, targets, and programmatic actions for each zone. Volume III addresses this program's adaptive management approach.

Delta issues

Impacts on the physical and biological environment:

- The ERP Delta outflow targets (which seek to more closely approach the seasonal outflow pattern; these targets may vary with the different storage and conveyance alternatives being considered) could have a substantial effect on stream flows and on water exports. (For specific targets and rationale, see pg. 39-41 of ERPP, Volume II).
- The ERP's actions would increase survival of adult fish and reduce impacts on self-sustaining populations (including those associated with the establishment of non-native species populations). Restoration of thousands of acres of aquatic areas (riparian, shallow water, shaded riverine, and tidal marsh) may result from the breaching of levees, the flooding of existing agricultural lands, and the setback of levees along existing channels.
- Groundwater pumping on low-lying agricultural lands which would be converted to wetland or aquatic habitat would no longer be needed; conversion to wetlands would bring about reductions in subsidence and release of farm chemicals into Delta waterways..
- Setback levees along the Consumnes River are expected to result in more groundwater recharge.

Impacts on agricultural land and water use, economics, and social issues:

- The ERP could convert up to 150,000 acres of important farmland in the Legal Delta to habitat restoration, levee setbacks, and floodways. Some of these agricultural uses may be shifted to the Central Valley or elsewhere.
- Specific locations where willing seller land acquisitions and restoration will occur are still uncertain; it is therefore difficult to assess the mix of crops that would be taken out of production. Removed crops could range from a mix of field and forage crops (corn, grain, pasture) to high-value orchards; gross revenue loss could range from \$50 to \$135 million per year.
- Conversion of agricultural lands in the Delta would result in a decrease in the number of jobs for farmers, farm workers, and agribusiness. This would subsequently put a temporary strain on social service and support programs in Delta communities while farm

workers are being provided with training or economic assistance. This is not expected to be a significant impact.

Impacts on recreational resources:

- Beneficial impacts are expected due to increased wildlife viewing and fishing opportunities resulting from the ERP. Also, the restoration of freshwater marshes and tidal wetlands could create new opportunities for duck hunters.
- Some areas currently used for agriculture may be converted to areas which would be more compatible to recreation (new deep-water areas and tidally-influenced channels) which would create new opportunities for recreational boaters. However, the construction of fish control barriers would have a significant adverse impact on boat traffic.
- The ERP includes a provision to reduce boat traffic and speeds in areas where levees or islands and their habitats are susceptible to wake damage; this could cause congestion during peak use days in summer months. It is also thought that the reduced speed requirements could alter personal watercraft and boat behavior, resulting in a decrease in the number of user-days for boating.
- Some recreation facilities (piers, marinas) would be temporarily or permanently closed following restoration.
- There is an expected increase in recreation-related jobs which could occur in conjunction with the decrease in farm-related jobs, although these changes are expected to affect different segments of the population and not necessarily offset each other.
- Commercial fishing is not expected to change appreciably.

WATER QUALITY PROGRAM

Summary

The goal of CALFED's Water Quality Program is to provide "good water quality" for all beneficial uses by making significant reductions in point and non-point source pollution. This element addresses programmatic actions which can be used to pursue this goal in the areas of mine drainage, urban and industrial runoff, wastewater and industrial discharge, agricultural drainage and runoff, water treatment, water management, human health, and toxicity of unknown origin. For each action identified under these categories, the program identifies the objectives and methods of research/monitoring, performance measures, and indicators of success.

The Program proposes strategies for phased implementation in each of the categories listed above. It also addresses the need for the ranking of water quality actions and the setting of implementation priorities. Parameters of concern and the CALFED water quality targets for these items are included (some of these targets are existing state standards; others reflect an expectation of more stringent standards to be adopted by regulatory agencies).

Delta issues

Impacts on the physical and biological environment:

- Impacts on groundwater quality expected to be negligible (most pollutants with the greatest potential for improvement are outside the Delta).
- Actions affecting water temperature (warmer temperatures expected from the creation of more shallow water habitat, but may be offset by shading associated with new riparian habitat) may affect specific sections of some Delta channels, but would not likely affect the entire Delta.
- Actions that address contaminant (metals and insecticides) input and movement upstream of the Delta could reduce the movement of contaminants into the Delta system.

Impacts on agricultural land and water use, economics, and social issues:

- Long-term benefits of improved water quality include reduced production costs, greater crop selection flexibility, and higher crop yields. Water quality BMPs, which could be implemented regionally, could raise production costs.
- Under some of the different alternatives, salinity is expected to be affected in various Delta locations (Jersey Point, Emmaton, Rock Slough, and Clifton Court Forebay). The impacts that each alternative will have on salinity in the Delta are addressed in Table 6.1.2-2 in the Programmatic DEIS/DEIR (pg. 6.1-43 through 6.1-47). Increased salinity could have a detrimental effect on the feasibility of agricultural production in these areas.

Impacts on recreation resources:

- Improved water quality could have indirect beneficial impacts on recreation, including diminishing health hazards related to ingesting "raw" water and improving water clarity. No actions under this program are expected to bring about negative impacts.
- Elements of this program could lead to improved conditions for fisheries, river recreation, and wildlife refuges, which would result in increased recreational spending and user benefits.
- More jobs for recreation workers are expected to be an indirect result of better water quality.

STORAGE AND CONVEYANCE (taken from DEIR/DEIS and Phase II Interim Report)

Summary

Storage and conveyance are the two variable program elements of the CALFED Bay-Delta solution. There are three primary conveyance configurations: Existing system conveyance (Alternative 1), Modified through Delta conveyance (Alternative 2), and Dual Delta conveyance (Alternative 3). Under Alternative 1, the Delta channels would essentially be maintained in their current configuration. Alternative 2 addresses the various modifications which could be made to Delta channels in order to bring about desired results. Alternative 3 is formed around a combination of modified Delta channels and a new canal or pipeline connecting the Sacramento River in the north Delta to the SWP and CVP export facilities in the southern Delta.

These three alternatives are further divided into twelve alternative variations, which may or may not include storage. Upstream surface storage, In-Delta surface storage, South of Delta off-aqueduct storage, and Groundwater storage are the different variables which appear in some of the alternative variations.

Delta issues

Impacts on the biological and physical environment:

Under all three alternatives, there are primary beneficial impacts which result from the restoration of aquatic and adjacent communities. Reoperation of reservoir and diversion facilities under the alternatives may provide short-term flow changes that would protect and enhance the ecological functions and processes within the Delta. Installation of new fish screens would also provide beneficial impacts.

Alternative 1

- Under Configurations 1B and 1C, barriers would be constructed in the south Delta; these would have an adverse impact on structural characteristics in that area. An operational barrier on Old River which would benefit chinook salmon in the San Joaquin River would have adverse effects on species in the central and south Delta. Very little change in Delta circulation patterns are expected for Configurations 1A and 1B, but small increases in the magnitude of reverse flows in the central Delta (due to increased south Delta pumping) are expected in Configuration 1C.
- Under 1C, sporadic improvements in Delta water quality are expected due to the addition of storage, which would provide additional high-quality water to supplement releases during low-flow periods.
- No significant adverse effects on salinity or other water quality indicators are expected.
- No expected impacts on groundwater resources.
- No significant adverse impacts to geology and soils under 1A. There would be significant and unavoidable impacts from conversion of agricultural soils for conveyance improvements under 1B and 1C. Under 1C, reduced applied salt loads due to increased flows from additional storage facilities, and reduced levee soil erosion in the south Delta due to channel enlargements, are expected. Levee erosion may occur in the north Delta channel, however, because channels are not being enlarged. Short-term increases in erosion rates from construction activities are expected.

Alternative 2

- Flow from the new channel (2A, 2B, 2D) could have an adverse impact on flow patterns

in the eastern and central Delta, but would reduce the incidence of reverse flows in the southern Delta.

- Construction of setback channels on Glanville Tract and at McCormack Williamson Tract could potentially remove and disturb natural communities, as could modifications in the north Delta (setback levees) and the creation of a Mokelumne River Floodway and east Delta Wetlands Habitat. Under 2A, 2B, and 2D, existing good-quality habitat in Snodgrass Slough and adjacent areas would be eliminated or modified; this could have adverse impacts on spawning and rearing of Delta species.
- Structural characteristics under 2D and 2E would substantially add to restoration benefits. Under 2A and 2B, barriers in the south Delta would have adverse impacts on structural characteristics in that area.
- In-Delta modifications and increased diversions will substantially increase through Delta flows and reduce reverse flows in the west Delta.
- Channel modifications in the north and east Delta would provide increased inflow of freshwater into the central Delta. This shift of freshwater to the central Delta could cause a decrease in water quality in selected areas in the Delta (Emmerton), but the net effect on Delta water quality is expected to be beneficial. Water quality is expected to improve significantly at southern export facilities (Clifton Court Forebay, Contra Costa Canal Intake), and at locations in the central Delta (Prisoners Point, San Andreas Landing) and west Delta (Antioch, Jersey Point).
- The configurations with storage components are expected to reduce salinity and bromide concentrations due to improved circulation patterns and shift of timing of Delta inflow. Water temperature may increase in the east Delta due to channel widening for habitat improvements; these temperature effects will be partially offset by shading associated with new riparian habitat.
- Short-term impacts associated with construction of proposed Delta channel modifications (increased sediment, nutrient, and possible toxic contaminant loading) are expected.
- No expected impacts on groundwater resources.
- Expected reduction in the potential for levee and interior island soil erosion due to levee setbacks and shallow flooding of Delta islands (2A, 2B, 2D, 2E). Possible increase in applied salt loads if leaching becomes inadequate.

Alternative 3

- Entrainment and associated mortality are expected to increase due to exports from the south Delta.
- Construction of the isolated facility could result in the disturbance or removal of natural communities.
- Expected reduction in north Delta inflow, and the equivalent reduction of south Delta pumping, would alter the pattern of flow through the Delta. The reduction (or elimination) in the north to south component of flow would more closely resemble the natural Delta flow pattern, benefitting the Delta ecosystem.
- Salinity increase expected in the south Delta due to reduced freshwater flows through the Delta; significant impacts east of the Clifton Court Forebay. However, salinity would be improved in the south central and southwest Delta (Rock Slough, Clifton Court, Prisoners Point).
- Construction of syphons, levee improvements, and screened intake facilities are expected

to bring about short-term effects; the operation of new screened intakes for in-Delta storage could produce long-term effects.

- Leakage is expected to occur through the unlined canals of the isolated facilities proposed under the various Configurations. This leakage could cause waterlogging of the soils along the alignment of the canal(s), and could have a significant adverse impact on water levels in these soils. Leakage rate is expected to be highest for a 15,000 cfs capacity canal (3E, 3I) and lowest for a 5,000 cfs capacity canal (3A, 3B, 3H).
- The in-Delta storage component (3B, 3E, 3I) would increase the hydraulic head of the groundwater across levees. This may result in significant and mitigable impacts on groundwater levels in the adjacent tracts (opposite banks of the Old River and Middle Rivers).
- Reductions in channel velocities and resultant levee soil erosion are expected with the use of an isolated facility (3A, 3B, 3E, 3H, 3I). Possible increase in applied salt loads if leaching becomes inadequate.

Impacts on agricultural land and water use, economics, and social issues:

For all three alternatives, it is expected that potential charges imposed on agricultural water use to help recover some costs of the program could lead to significant changes in agricultural activities (land and water use, crop selection).

Conflict with local or regional agricultural land use plans or policies with respect to agricultural land conversion is expected to be a significant impact.

The physical division or disruption of established communities is expected to be a significant and unavoidable impact.

Alternative 1

- South Delta modifications could include direct impacts on agricultural land associated with the construction of a barrier at the head of Old River and flow and stage control facilities. Agricultural habitat could also be affected by the construction of an intertie between the Tracy Pumping Plant and Clifton Court Forebay.
- The economic impact of the conversion of up to 400 acres of agricultural land under this alternative's conveyance configurations is considered to be less than significant.

Alternative 2

- Channel widening and island flooding would require the conversion of 4,000 to 28,000 acres of agricultural land; adverse land use impacts would be significant.
- For all of the configurations under this alternative, the loss of between \$1.9 million and \$6.2 million per year in crop revenues due to the conversion of agricultural land is considered to be a significant adverse economic impact.

Alternative 3

- Construction of the isolated facility could result in the permanent conversion of 4,500 to 33,500 acres of important farmland; adverse land use impacts would be significant.
- The conversion of agricultural lands for the various storage and conveyance options could result in a loss of \$2.3 million to \$21 million per year in crop revenues. Significant impacts to farm employment, agricultural suppliers, and other economic sectors are expected.

Impacts on recreation resources:

Alternative 1

- Construction of improvements under 1B and 1C may temporarily restrict boating, fishing, hunting, and wildlife viewing in the vicinity of the construction area. The operation of

these improvements is expected to improve fishery resources and therefore increase the visitor use for fishing activities. However, the operation of fish control barriers in the south Delta would negatively impact boating in that area.

- The south Delta modifications are expected to have minor beneficial effects on recreation spending and user benefits resulting from the increase in sport fishing opportunities.

Alternative 2

- The construction of the Mokelumne River Floodway modifications and the flooding of Bouldin Island (2D and 2E) may result in temporary recreation impacts during construction. The operation of these configurations would permanently displace any land-based recreation currently ongoing at Bouldin Island; similar adverse impacts would be expected from the inundation of Tyler Island (2E). The inundation of these two islands is expected to bring about an increase in fishing, wildlife viewing, and boating.
- The new waterfowl hunting opportunities resulting from the modifications in 2D and 2E are expected to bring about increased spending and user benefits. Also, moderate to large economic benefits related to water-based recreation are expected.

Alternative 3

- In-Delta storage may result in significant impacts to existing recreation due to inundation or other related construction impacts. Development of conveyance facilities could permanently close or displace eastern Delta recreation facilities, resulting in a significant impact to recreational opportunities and employment.
- Large increases in recreational spending and user benefits are expected due to sport fishing and other water-based recreation activities; this could offset the revenue lost by the temporary or permanent displacement of existing facilities and activities.

DRAFT IMPLEMENTATION STRATEGY

Summary

This appendix to the DEIR/DEIS has arisen from the desire among all actors in this process that the CalFed solution ultimately be implemented as agreed. The Draft Implementation Strategy addresses some of the concerns that stakeholders have expressed regarding the implementation of the CalFed solution. These issues generally fall under one of two categories: assurances or financing.

Assurances

Stakeholder concerns (operations of a water conveyance or storage facility, adaptive management, water rights), tools (constitutional amendments, statutes, market incentives), guidelines (satisfying the solution principles, including recovery mechanisms), and issues (a new implementing entity for the ERP, ongoing stakeholder involvement) are identified.

Also included in the discussion of assurances is the completion of an "Assurances Package", which would be composed of an assurances proposal (options for assuring the variable, as well as the common, program components), a contingency plan, and a strategy for staged implementation strategy. To begin the effort of building this assurances package, four stages the program has identified four stages:

- Stage I (Mar '98 through Dec '98) involves drafting individual implementation plans for each program component (which would include a description of the actions to be taken, tools and strategies to be used, and a schedule for implementation, and a discussion of how and when success is to be measured), drafting an implementation document to be circulated for agency and public review and comment, and describing how the program is to be managed in the near term.
- Stage II (Jan '99 through Dec '99) involves introducing state/federal legislation necessary for solution implementation, drafting contracts and agreements, signing and executing a conservation strategy, establishing a forum for discussions with members of the public, and finalizing the contingency response process.
- Stage III (Jan 2000 through Dec 2000) involves establishing a stakeholder advisory or oversight committee, implementing the levee stabilization program and emergency plan, completing site-specific analysis and seeking permit authority, implementing the ERP and ecosystem restoration monitoring plans, and implementing the water use efficiency and water quality programs.
- Stage IV (Jan 2001 through Dec 2030) includes establishing long-term implementation authority and responsibility, and assuring the program is being implemented in a consistent and coordinated manner.

Financing

The Financial Strategy is a conceptual plan for funding the long-term CalFed solution. Principles identified by the Finances work group include: benefits-based allocation and public/user split (these address the question of who pays); public money/benefits vs. user money/benefits; ability to pay; crediting; and cost allocation methodology.

Funding for each of the program elements is also discussed in terms of funding sources, expected amounts from each source, and approximate total cost.

**SUMMARY OF ERPP HABITAT RESTORATION TARGETS AND PROGRAMMATIC ACTIONS FOR
THE SACRAMENTO-SAN JOAQUIN DELTA ECOLOGICAL ZONE.**

Habitat Type	North Delta Acreage	East Delta Acreage	South Delta Acreage	Central and West Delta Acreage	Total Acreage
Tidal Perennial Aquatic	1,500	1,000	2,000	2,500	7,000
Shoal	0	0	0	500	500*
Nontidal Perennial Aquatic (deep open water)	0	200	200	100	500
Nontidal Perennial Aquatic (shallow open water)	1,000	300	300	500	2,100
Midchannel Islands	50 to 200	50 to 200	50 to 200	50 to 200	200 to 800*
Fresh Emergent Wetland (tidal)	TBD [to be determined]	TBD	TBD	TBD	30,000 to 45,000
Fresh Emergent Wetland (nontidal)	3,000	3,000	4,000	10,000	20,000
Seasonal Wetland	Improve: 1,000 Restore: 4,000	1,000 6,000	500 12,000	1,500 8,000	4,000 30,000
Inland Dune Scrub	0	0	0	50 to 100	50 to 100*
Perennial Grassland	1,000	1,000	1,000 to 2,000	1,000 to 2,000	4,000 to 6,000
Wildlife Friendly Agricultural Land	TBD	TBD	TBD	TBD	40,000 to 75,000*
Total acres					138,000 to 191,000

* Denotes acreages that have minimal impact to existing agricultural land uses and practices.

Note: Table does not include acreages for riparian and riverine aquatic habitat, Delta sloughs, levee reliability program, or conveyance facilities.

Alternative	Region	ERP			Levees			Storage			Conveyance			Water Quality ¹	Total
		P	S	U	P	S	U	P	S	U	P	S	U		
Alt 1	Delta	93,000-105,000	3,500-6,500	1,500-3,500	31,000	2,500-3,000	500-1,000	0	0	0	0-300	0-100	0	0	132,000-150,400
	Sacramento River	17,000-22,000	2,500-3,000	500-1,000	0	0	0	0	0	0	0	0	0	0	26,000-34,000
	San Joaquin River	8,200-9,500	800-1,000	300-500	0	0	0	0	0	0	0	0	0	35,000-45,000	44,300- ² 56,000
Alt 2	Delta	93,000-105,000	3,500-6,500	1,500-3,500	31,000	2,500-3,000	500-1,000	0	0	0	3,500-24,500	100-3,000	400-1,500	0	136,000-179,000
	Sacramento River	17,000-22,000	2,500-3,000	500-1,000	0	0	0	0	0	0	0	0	0	0	26,000-34,000
	San Joaquin River	8,200-9,500	800-1,000	300-500	0	0	0	0	0	0	0	0	0	35,000-45,000	44,300- ² 56,000
Alt 3	Delta	93,000-105,000	3,500-6,500	1,500-3,500	31,000	2,500-3,000	500-1,000	0-14,000	0-2,000	0	3,500-27,000	200-5,000	300-1,500	0	136,000-199,500
	Sacramento River	17,000-22,000	2,500-3,000	500-1,000	0	0	0	0	0	0	0	0	0	0	26,000-34,000
	San Joaquin River	8,200-9,500	800-1,000	300-500	0	0	0	0	0	0	0	0	0	35,000-45,000	44,300- ² 56,000

Types of Farmland

- Prime (P) - Land with the best combination of physical and chemical features for the production of agricultural crops
- Statewide Importance (S) - Land with a good combination of physical and chemical features for the production of agricultural crops
- Unique (U) - Land of lesser quality soils used for the production of the State's leading agricultural cash crops

¹Estimated acreages of important farmlands cannot be attained at this time because mapping has not been completed in the San Joaquin River Region. It is possible that Important Farmlands will be affected by the Water Quality Program in the Grasslands subarea of the San Joaquin River Region.

²Total includes lands potentially affected by Water Quality Program.

Table 5-2. Estimated Acreages of Important Farmland Impacted by Program Actions

Habitat Type*	Bay Region	Delta Region	Sacramento River Region	San Joaquin River Region
Tidal perennial aquatic	2,500	7,000		
Tidal perennial aquatic (shoals)		500		
Nontidal perennial aquatic	500	2,600		1,000
Tidal sloughs	600-1,500	600-1,200		
Midchannel islands		200-800		
Fresh emergent wetland (tidal)		30,000-45,000		
Fresh emergent wetland (nontidal)		20,000		
Seasonal wetland	5,800-6,400	30,000		
Riparian	100	1,000-1,500	6,500-7,000	6,000-6,900
Saline emergent wetland (tidal)	7,500-12,000			
Stream meander corridor			19,500-27,000	1,500-1,800
Floodplain/levees				800-1,500
Perennial grassland	22,000-28,000	6,000		
TOTAL ACRES	22,000-28,000	98,000-115,000	26,000-34,000	9,300-11,000

* NOTE: The table does not include agricultural land which will be cooperatively managed for the benefit of waterfowl. The acreage is approximately 40,000-70,000 acres for the Delta Region, 300,000 acres for the Sacramento River Region, and 15,000 acres for the San Joaquin River Region. The cooperatively managed lands will have minimal impact on agricultural lands.

Table 5-3. Possible Land Area Affected by Ecosystem Restoration

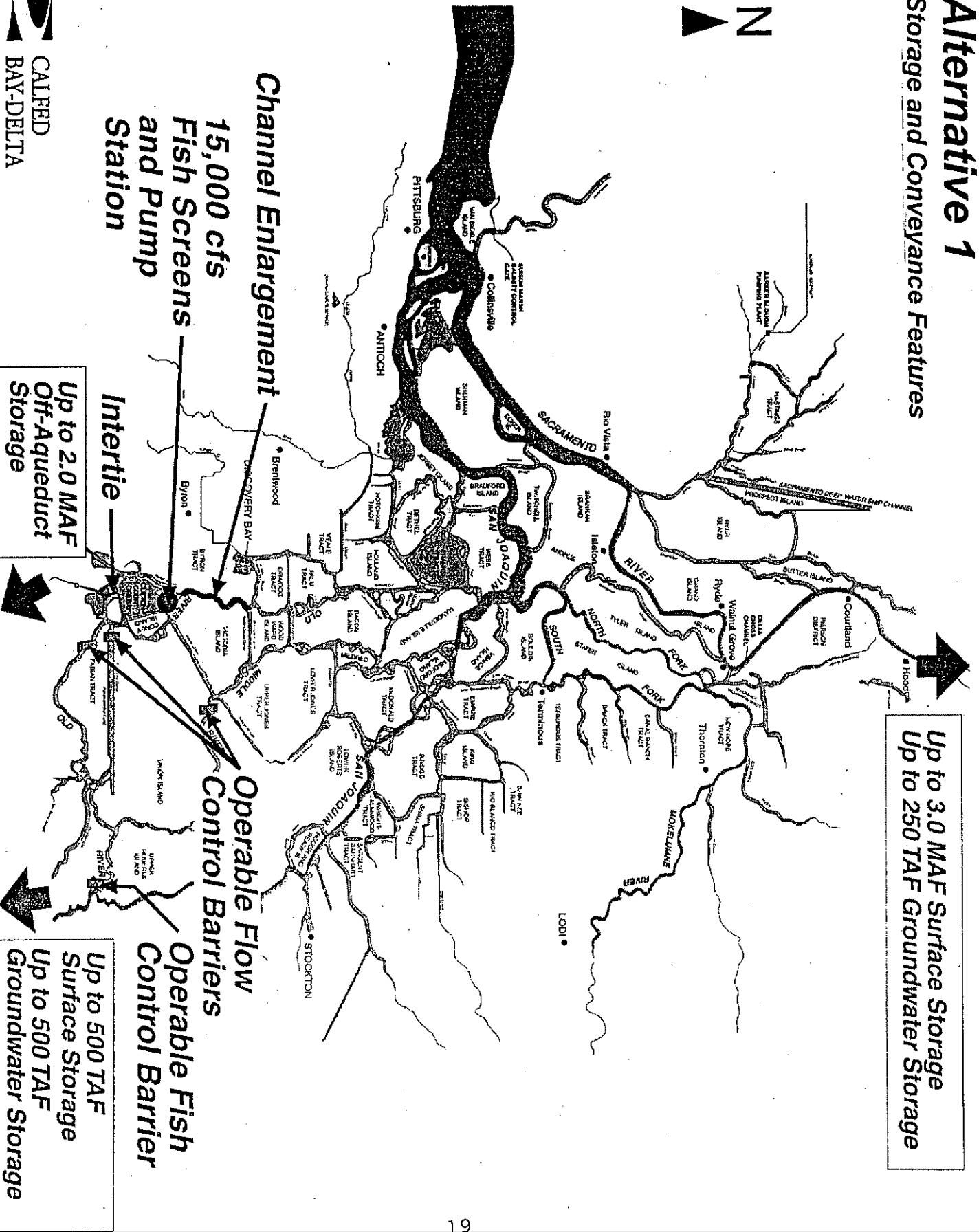
		DELTA REGION		SACRAMENTO RIVER REGION	SAN JOAQUIN RIVER REGION	ALL REGIONS
Alternatives		Storage	Conveyance	Storage	Storage	Total
Alt 1	A	0	0	0	0	0
	B	0	100	0	0	100
	C	0	400	18,000-32,000	8,500	26,900-40,900
Alt 2	A	0	4,000-4,500	0	0	4,000-4,500
	B	0	4,000-4,500	18,000-32,000	16,600	38,600-53,100
	D	0	18,000-20,500	0	8,500	26,500-29,000
	E	0	25,200-28,000	18,000-32,000	16,600	59,800-76,600
Alt 3	A	0	4,500-6,000	0	0	4,500-6,000
	B	14,000-15,000	4,500-6,000	18,000-32,000	16,600	53,100-69,600
	E	14,000-15,000	5,000-5,500	18,000-32,000	16,600	53,600-69,100
	H	0	29,000-33,500	18,000-32,000	16,600	63,600-82,100
	I	4,000-4,500	7,000-9,000	18,000-32,000	16,600	45,600-62,100

Table 5-4. Possible Land Area Affected by CALFED Storage and Conveyance (in Acres)

Programs			Storage										Conveyance										Isolated Facilities																									
			South Delta					North Delta					South Delta					North Delta					South Delta					North Delta																				
Existing Through Delta Channels	Modified Through Delta	Dual System																																														
Alt 1 A	B	C																																														
Alt 2 A	B	D	E																																													
Alt 3 A	B	E	H	I																																												
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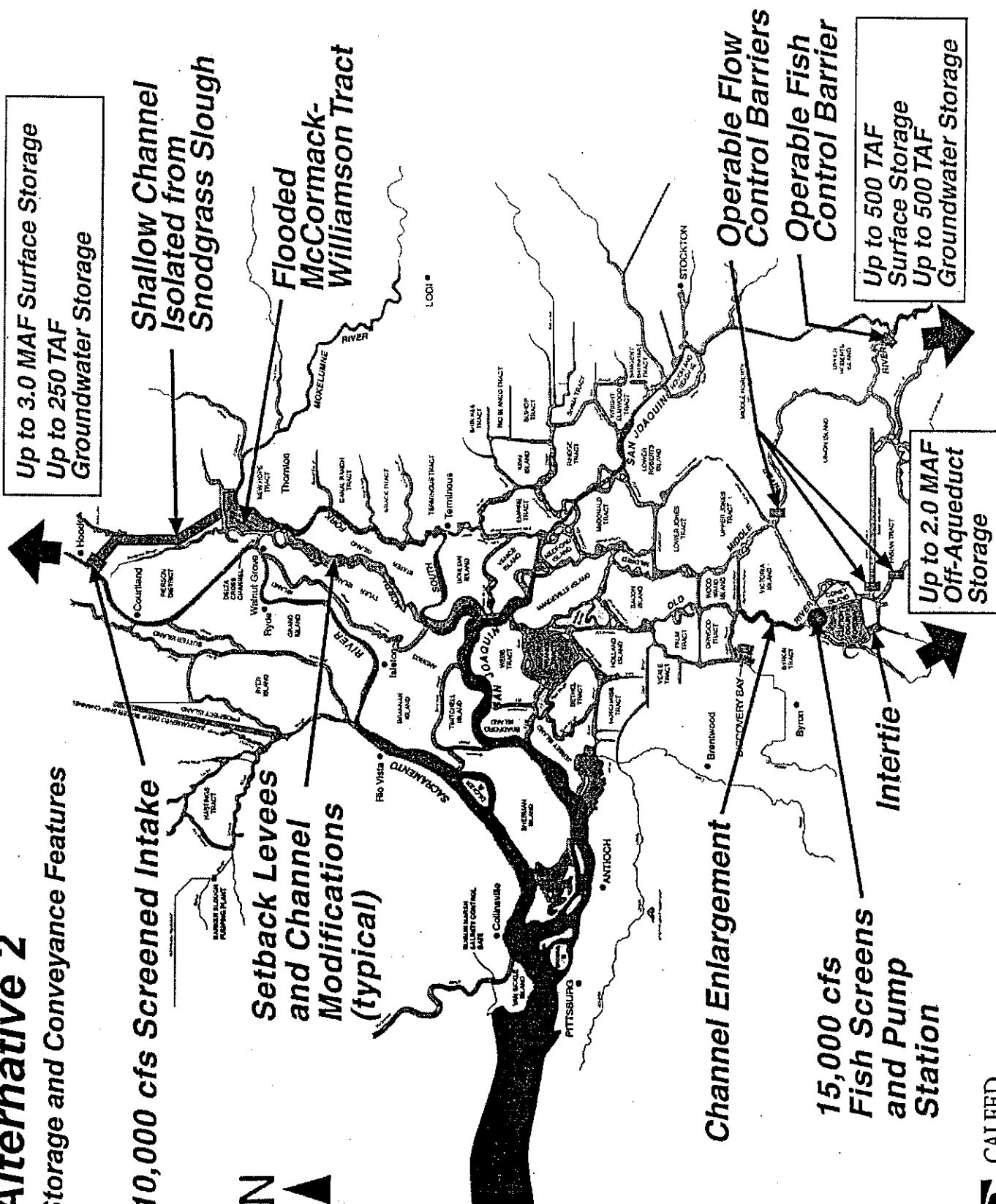
Alternative 1

Storage and Conveyance Features



Alternative 2

Storage and Conveyance Features



CALFED
BAY-DELTA
PROGRAM

Alternative 3

**10,000 cfs \pm 2,000 cfs
Screened Intake(s)**

**Up to 3.0 MAF
Surface Storage
Up to 250 TAF
Groundwater Storage**

Open Channel Isolated Facility

• Look Possible Channel Modifications

**5,000 cfs \pm 2,000 cfs
Fish Screens and
Pump Station**

Operable Flow Control Barriers

**Up to 2.0 MAF
Off-Aqueduct
Storage**

**Up to 500 TAF
Surface Storage
Up to 500 TAF
Groundwater Storage**



MAP OF ZONES

NORTH

~~DELTA~~ BOUNDARY



0 10,000 20,000 30,000 40,000
SCALE IN FEET

EAST

A map of the Primary Zone, showing the Venice Canal and surrounding tracts. The map includes labels for 'PRIMARY ZONE', 'VENICE CANAL', 'FRANKS TRACT', 'WEBB TRACT', 'HARVEY TRACT', and 'ISLAND'. The map is oriented with North at the top.

DELTA BOUNDARY
CENTRAL
& WEST

DELTA BOUNDARY - SECTION
12220 OF THE WATER CODE

PRIMARY ZONE

SECONDARY ZONE

SOUTH